



UNITED STATES PATENT AND TRADEMARK OFFICE

fm
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,148	11/28/2001	David R. Greenberg	FIS920010262US1	3056

32074 7590 04/13/2004

INTERNATIONAL BUSINESS MACHINES CORPORATION
DEPT. 18G
BLDG. 300-482
2070 ROUTE 52
HOPEWELL JUNCTION, NY 12533

EXAMINER

DEBERADINIS, ROBERT L

ART UNIT	PAPER NUMBER
----------	--------------

2836

DATE MAILED: 04/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/996,148

Applicant(s)

GREENBERG ET AL.

Examiner

Robert DeBeradinis

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The reply filed 2/19/04 consists of remarks related to rejection of claims. Claims 1-14 are not allowable for the following reason.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over LOO 6,331,257 in view of FISHER 4,132,487.

Regarding claims 1, 2, 9, 12.

LOO discloses a micro-electromechanical switch comprising:

At least one contact electrode (20); and

A deflecting beam (38), said deflecting beam contacting said at least one contact electrode.

LOO does not disclose a compressible deformable means affixed to at least one end of said deflecting beam or to at least one of said contact electrodes.

FISHER discloses an elastomeric conducting element (33) suitable attached to conductive element 32.

It would have been obvious to one having ordinary skill in the art at the time of this invention to affix a compressible deformable means to at least one of said electrodes (20 or 28). The motivation would be to eliminate contact bounce (column 2, lines 56-59).

Regarding claims 3, 4, 10, 13.

LOO in view of FISHER discloses the micro-electromechanical switch as recited in claim 1 further comprising a control electrode (22) coplanar to said at least one contact electrode (20).

Regarding claim 5.

LOO in view of FISHER discloses the micro-electromechanical switch as recited in claim 4.

LOO in view of FISHER is silent as to the spring constant of said deflectable beam.

The Examiner takes official notice. The spring constant as it relates to the mechanical forces to operate the micro-electromagnetic switch are obviously well known in the art.

It would have been obvious to one having ordinary skill in the art at the time of this invention to calculate the mechanical force exerted by the spring constant. The motivation would be to determine the control electrode voltage required to operate the micro-electromechanical switch.

Regarding claims 6, 7, 8, 11, 14.

LOO in view of FISHER disclose the micro-electro-mechanical as recited in

claim 1.

LOO in view of FISHER does not disclose wherein said compressible deformable means introduces a non-linear increase to a separating force able to overcome stiction as the micro-electromechanical switch nears its closed position.

The Examiner takes official notice. The compressible conductive materials and the mechanical forces characteristic of the different materials along with the forces related to stiction are well known in the materials art and the electro-mechanical art.

It would have been obvious to one having ordinary skill in the art at the time of this invention to select the material to affix to the electrode of the electromechanical switch. The motivation would be to provide the required force to overcome the stiction force to separate the electromechanical contacts.

Response to Arguments

Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

Claim 15 allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose multiple stacked layers having different spring constants.

Any inquiry concerning this communication should be directed to Robert L. DeBeradinis whose number is (571) 272-2049. The Examiner can normally be reached Monday-Friday from 8:30 am to 5:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Brian Sircus, can be reached on (571) 272-2058. The Fax phone number for this Group is (703) 872-9306.

RLD

APRIL 5, 2004

A handwritten signature in black ink, appearing to read "Robert L. DeBeradinis". The signature is fluid and cursive, with the first name "Robert" and last name "DeBeradinis" clearly distinguishable.